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Hires' Performance and Likelihood of Voluntary Turnover

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Abstract

The literature on employee referral hiring gives little attention to referrers. Synthesizing two theories in the literature (the better match and social enrichment accounts), through the lens of social resources theory, I provide a conceptual and empirical breakdown of the effects of referrer quality (referrer performance at hire and referrer tenure at hire) and post-hire accessibility (referrer employment and referrer-referral hire job congruence) on referral hire performance and likelihood of voluntary turnover. I tested my hypotheses with longitudinal data from 386 referrer-referral hire pairs at the same job level in a U.S. call center over a 2-year period. Across analyses of two performance criteria (calls/hour and quality) and likelihood of leaving, I found a nuanced mix of benefits and liabilities that illuminate potential boundary conditions of the revised theories. Referral hires from high-performing referrers performed better but had higher turnover propensities than those from lower performing referrers. Longer-tenured employees also produced better performing referral

hires, up to a point. Referral hires were less likely to leave, provided their referrer remained employed, but they performed less effectively under this condition. Similarly, referral hires performed worse when their job was congruent with their referrer's job. Theoretical and practical implications are discussed.

Keywords: employee referral, referrer, recruitment source, performance, voluntary turnover

Uncovering the Nuances of Referral Hiring: How Referrer Characteristics Affect Referral Hires' Performance and Likelihood of Voluntary Turnover

Attracting, selecting, and retaining employees with the necessary human capital (knowledge, skills, abilities, and other characteristics) significantly affect an organization's success (Barber, 1998; Breugh, 1992; Ployhart, 2006; Rynes, 1991). Recruitment is a primary human resource (HR) practice that influences human capital acquisition, and the success of subsequent HR practices (like training and compensation) hinges, in part, on the quality of the human capital recruited (Barber, 1998; Ployhart, 2006). Furthermore, it has retention implications, as organizations must implement strategies to retain acquired talent (Nyberg, 2010; Sturman, Trevor, Boudreau, & Gerhart, 2003; Trevor, Gerhart, & Boudreau, 1997).

One of the more conceptually interesting and popular recruitment sources is the employee referral. Employee referral programs encourage employees (*referrers*) to refer open positions in their organization to qualified candidates in their social networks (*referral hires*). Intuitively, they make good business sense, because an employee is both motivated and uniquely qualified to recommend good candidates and can do so at minimal cost to the organization. This practice has been used for decades to fill 30% to 50% of job openings (Bewley, 1999; Fernandez, Castilla, & Moore, 2000; Granovetter, 1995).

Referral hiring yields positive individual and organizational outcomes. Benefits for job seekers include: 1) a low cost method of locating jobs (Fernandez & Fernandez-Mateo, 2006; Marsden & Gorman, 2001); 2) speed in learning about opportunities (Burt, 1992; Granovetter, 1974); 3) higher probability of receiving an offer (Fernandez et al., 2000; Holzer, 1988; Van Hove, van Hooft, & Lievens, 2009); and 4) higher wages (Burt, 1992; Granovetter, 1974; Seidel, Polzer, Stewart, 2000; Simon & Warner, 1992). For employers, it

is a cost-effective recruitment tool (Fernandez et al., 2000; Marsden & Gorman, 2001; Morehart, 2001). For instance, Fernandez et al. (2000), using dollar costs of screening, hiring, and training in a call center, estimated the net benefit of hiring referrals. They calculated a savings of \$416 for each new referral hire, or a 67% return on investment of the initial \$250 referral bonus. Referral hires are more satisfied (Granovetter, 1974), perform at higher levels (Blau, 1990; Castilla, 2005; Hill, 1970; Holzer, 1987; Pinkston, 2012), and stay longer (Conrad & Ashforth, 1986; Decker & Cornelius, 1979; Holzer, 1987; Weller, Holtom, Matiaske, & Mellewigt, 2009). Moreover, reviews of recruitment source research indirectly support these benefits (Barber, 1998; Breaugh & Starke, 2000; Rynes, 1991; Rynes & Cable, 2003; Rynes, Heneman, & Schwab, 1980; Schwab, 1982; Taylor & Collins, 2000; Zottoli & Wanous, 2000). On average, employees hired from inside sources (e.g., in-house job notices, employee referrals, and rehires) have lower turnover and higher performance than those hired from outside sources (e.g., newspaper ads and employment agencies) and walk-ins.

Although these studies have provided valuable insights into referral hiring, little work has considered whether referral hire outcomes depend upon characteristics of the referrer. Given that referrers naturally endow referral hires with a social connection upon employment in the firm, and not all referrers are equal (Montgomery, 1991), certain characteristics of the referrer likely shape referral hire outcomes. In fact, studies have shown that referral hires are more likely to leave (Fernandez et al., 2000) or experience a decrease in performance (Castilla, 2005, utilizing the dataset in Fernandez et al.) when their referrer leaves. Yakubovich and Lup (2006) found that candidates referred by high performers are more likely to receive job offers. In related work, Van Hoye and colleagues (2009) found that referrers with better educational and occupational backgrounds enhanced the effectiveness of a job searcher's networking in finding employment. As a whole, this work highlights the potential benefits of incorporating referrer characteristics in models of referral hire outcomes.

However, the literature does not propose a compelling theory that referrer characteristics are likely to influence referral hire outcomes.

In response, I contribute a model of referrer characteristics grounded in social resources theory (Lin, 1999, 2001; Lin, Ensel, & Vaugh, 1981) that influence referral hire outcomes (see Figure 1). Based on this theory, the success of the referrer-referral hire connection depends on the quality of the resources (e.g., support, advice, and organization/job knowledge) available in this connection and factors that affect the extent to which these resources are accessible. Using data from 386 referrer-referral hire pairs in an entry-level job at a large U.S. call center over a 2-year period, I empirically examine the influence of referrers' *quality* (performance and tenure) and *post-hire accessibility* (employment and job similarity) on referral hire performance and voluntary turnover propensity.

My results offer some insights into the nuances of referral hiring and suggest that the theories related to this phenomenon may be overly simplistic. Looking at referrer characteristics through the lens of social resources theory allows for synthesis of two dominant theories—the better match argument and social enrichment perspective—to explain why referral hiring leads to more successful employees. This approach also generates theoretically compelling predictions about the effectiveness of referral hires, fundamentally advances prior work, and provides new directions for future research and practice.

Theory and Hypotheses

Why Referral Hires Are Better Employees

Economic theory proposes that referrers improve the match between candidates (i.e., referral hires) and the job/organization because they mitigate asymmetric information problems associated with the labor market. Fernandez et al. (2000) termed this the “better match account” (p. 1293). As Stigler (1962) points out, no individual can gain and maintain complete information on all possible employers; likewise, employers cannot gain complete information about candidates. Thus, given the labor market’s omnipresent uncertainty (Rees, 1966), referrers serve as important conduits of information between candidates and employers. Referrers are uniquely positioned to provide candidates with realistic and difficult-to-obtain information about the job otherwise not available (Jovanovic, 1979; Rees & Shultz, 1970; Reid, 1972; Ullman, 1966). Moreover, because employees are often said to put their reputations on the line when referring (Kugler, 2003; Marin, 2012; Rees, 1966; Smith, 2005; 2007), it is in their interest to refer those who reflect positively on them. In turn, referral hires exhibit a higher likelihood of job fit than non-referrals because they acquired better knowledge of the job/organization, have tighter expectations, and are positioned to make a better decision on whether to apply for the job (Weller et al., 2009). Thus, referral hires make better matches and employees.

While the better match argument centers on social processes prior to organizational entry, the social enrichment perspective focuses on relational processes following entry (Castilla, 2005; Fernandez et al., 2000; Skolnick, 1987). Its central tenet is that referral hires are endowed with a friend or acquaintance who enriches the job and nurtures their job embeddedness. Fernandez et al. (2000) suggested that referral hires are more effective because social relations with referrers extend beyond the recruitment stage to actual entry and socialization into the organization. The exchange of information and support continues

throughout a referral hire's employment. A referrer also is motivated to keep sharing resources because of self-interest in protecting his or her reputation from a bad referral. Referrers can help referral hires cope with and make sense of unanticipated events (Louis, 1980; Reichers, 1987; Sutton & Louis, 1987), reduce a referral hire's role ambiguity (Chen, Takeuchi, & Shum, 2013), and even exert some peer pressure on referral hires to perform well and stay longer (Kugler, 2003). Such factors can boost referral hires' socialization into the firm (Morrison, 2002). Because coworker support generally results in positive job attitudes and increased individual performance (see Chiaburu & Harrison, 2008, for meta-analytic evidence), it is reasonable to conclude that the support a referrer provides to help a referral hire adjust to the work setting can help improve performance. The socialization literature suggests coworkers can facilitate newcomers' entry into the job through informal training and mentoring (Louis, 1980). Because the strength of the relationship (i.e., "the amount of time, emotional intensity, intimacy, and reciprocal services," Granovetter, 1973, p. 1360) between a referral hire and referrer is likely of greater magnitude than that between other newcomers and coworkers, the socialization effect should be stronger for referral hires.

Although the better match and social enrichment perspectives differ in their underlying explanations, both lead to congruent predictions of referral hire effectiveness. Despite being positioned as competing theories (Castilla, 2005; Fernandez et al., 2000), neither is necessarily wrong, and evidence in support of each has been found. In fact, different rationales are required to explain recruitment source effects given the various stages of recruitment and socialization (Barber, 1998). The two frameworks are complementary and can be fused to offer a sophisticated explanation of referral hire effectiveness that suggests both fit and socialization effects.

While prior research has compared referral hires to other recruitment sources—finding weak to moderate positive effects for referral hires—it is still necessary to establish

the baseline effects here (for reviews of baseline effects, see Rynes & Cable, 2003; Zottoli & Wanous, 2000). Such baselines serve to confirm (or refute) past research findings and should be established before testing the core hypotheses about the degree to which referrer characteristics enhance our understanding of referral hire outcomes. Therefore, I present the following baseline predictions:

Hypothesis 1a: Referral hires will have higher performance than non-referral hires.

Hypothesis 1b: Referral hires will have lower likelihood of voluntary turnover than non-referral hires.

A Closer Examination of Referral Hire Outcomes and Referrer Characteristics

Fundamental to advancing our knowledge of referral hiring is a better understanding of the referrers. Neither the better match account nor the social enrichment perspective offers direct insight into the characteristics of referrers that shape referral hire effectiveness. Therefore, I draw on key components from social resources theory (Lin, 1999, 2001; Lin et al., 1981) to develop a model of referrer characteristics, synthesizing rationale from both perspectives.

Social resources theory positions social capital as the resource (i.e., valued material or symbolic goods) embedded in the social structure and network. Lin and colleagues (1981) argued that the advantage garnered by social capital derives not from the strength of one's ties (Granovetter, 1973) nor the presence of structural holes in one's social network (Burt, 1992), but from the resources available through social ties. Thus, the significance of the social resources will affect the outcomes of the person who has access to them (Lin, 1982; 2001). Because this theory clarifies the differential nature of social connections explicit in both the better match and social enrichment perspectives, it elucidates how they are interlinked.

Social resources theory proposes that accruing better social resources is associated with enhanced occupational outcomes (e.g., getting a job or promotion and higher income;

Lin, 1999, 2001; Lin et al., 1981). Referral hires from referrers with greater resources, particularly job and organizational knowledge, should be better employees. For that reason, I assign to referrers differential significance, which is implied by factors that reveal the quality of referrers' resources. That is, one referrer may have better in-depth knowledge than another, causing variation in the depth and quality of information exchanged with the referral hire. High-quality referrers should lead to better referral hires because they have better resources to match candidates and are more effective on-the-job resources (complementing the social enrichment perspective). Social resources theory also posits that structural characteristics of the social network (e.g., network location) challenge one's opportunity to access social resources, thereby influencing occupational outcomes (Lin, 1999, 2001; Lin et al., 1981). My model accounts for two characteristics implying referrer quality—referrer performance at hire and referrer tenure at hire—and two characteristics that influence the extent to which referral hires have access to the referrer's social resources—referrer employment and referrer-referral hire job congruence.

Referrer performance at hire. Two prior studies have investigated the effect of the referrer's performance at the time the referral hire enters the organization, but with conflicting results. Yakubovich and Lup (2006) found that more job offers were given to referrals from high-performing referrers than from poor-performing referrers—suggesting that referrer performance influences post-hire outcomes. Castilla (2005), on the other hand, found no relationship between referrers' performance rating and referral hire performance. This non-significant finding may be due in part to Castilla's use of a dichotomous performance measure.

Despite these disparate findings, there is strong conceptual rationale for the notion that referral hire effectiveness will differ across referrer performance levels. As performance is a direct function of one's tacit understanding of how to succeed in the job (Sternberg,

Wagner, Williams, & Horvath, 1995; Wagner & Sternberg, 1985), high-performing referrers should lead to more productive referral hires, because they can give candidates more accurate information during the referring stage, facilitating a better match (Yakubovich & Lup, 2006). Once these referral hires are on the job, referrers should be motivated to extend their accrued knowledge of job success (or even exert peer pressure) in order to defend their reputations as good employees. In turn, referral hires will better understand the knowledge and expected behaviors necessary to assume their roles, positively affecting their performance. Therefore, I hypothesize:

Hypothesis 2a: Referrer performance at hire is positively related to referral hire performance.

The logic underlying the case that referrer performance influences the likelihood of a referral hire leaving is more ambiguous. One could argue that high-performing referrers are more likely to help referral hires better understand the tacit knowledge and behaviors required to succeed in the job, both during recruitment and on the job. The result would be better person-job fit that can buffer against the unexpected “shocks” that may arise for newcomers, making it less likely that they would leave voluntarily. However, there is strong logic for an alternative prediction that referrer performance at hire will be positively related referral hire’s likelihood of leaving. Jackofsky (1984) proposed a *u*-shaped relationship between performance and turnover, such that both low and high performers have a higher probability of leaving than do average performers. Empirical work concurs with this proposition (Salamin & Hom, 2005; Sturman & Trevor, 2001; Trevor et al., 1997; Williams & Livingstone, 1994). A low performer’s desire to leave may result either from pressure to leave the organization before being formally terminated (Jackofsky, 1984) and/or from low job satisfaction (Steers & Mowday, 1981). High performers, on the other hand, who benefit from the availability of alternative employment opportunities due to their greater human capital, are more prone to leave for greener pastures. Because Hypothesis 1a, supported by

existing research (Blau, 1990; Castilla, 2005; Hill, 1970; Holzer, 1987; Pinkston, 2012), positions referral hires as better performers than non-referral hires, referral hires should be less likely to fall into the low-performer end of the employee performance distribution. Given this, the *u*-shaped relationship proposed by Jackofsky is less relevant when considering referral hires. Rather, his prediction about greater high performer turnover is most appropriate, particularly to the degree that referrer performance is positively related to referral hire performance in Hypothesis 2a. I hypothesize:

Hypothesis 2b: Referrer performance at hire is positively related to the likelihood of referral hire voluntary turnover.

Referrer tenure at hire. The second quality characteristic is referrer tenure at hire. Because longer-tenured employees will have acquired richer work experiences and job- and organization-related tacit and explicit knowledge (Bird, 1996; Quinones, Ford, & Teachout, 1995), they likely will offer candidates higher quality and more realistic information about the employer—in line with the better match notion. Congruent with the social enrichment perspective, after referred candidates are hired, longer-tenured referrers also should be more effective sources of advice and support, nurturing positive performance in referral hires. Such referrers should also be in a better position to help newcomers understand unanticipated events that arise early in employment, mitigating any shocks that may cause them to leave. These factors suggest a positive relationship between referrer tenure and referral hire performance.

However, I argue that the relationship between referrer tenure and referral hire performance is curvilinear, with a negative effect at high levels of referrer tenure. Despite their advantages in experience and organizational knowledge, longer-tenured referrers may be further removed from the challenges and ambiguities newcomers face and may possibly have picked up “bad habits” in the course of their tenure. As a result, the information they pass along to candidates may not be as accurate as the information shared by referrers with

less tenure. They also may not recall the strategies and coping skills that apply to newcomers, or their advice and support may no longer apply to the referral hire's job tasks. Further, because longer-tenured referrers likely have proven reputations, they may be less concerned with the effect of a referral hire's overall performance on their reputations. In short, referrers are better able to match candidates and serve as effective post-hire resources as they accrue experience and knowledge across their tenure, but these may become obsolete the further referrers are from the hiring and socialization stages. In combination, these logics suggest a curvilinear effect of referrer tenure.

Hypothesis 3: A curvilinear relationship exists between referrer tenure at hire and referral hire performance, such that referrer tenure at hire is positively related to referral hire performance, but the effect is negative at high levels of referrer tenure.

The effect of referrer tenure on the likelihood of referral hire voluntary turnover is not as clear. While longer-tenured referrers can provide better information and/or support to help referral hires cope with unexpected shocks that might cause them to leave, this benefit tapers off at higher levels of referrer tenure, suggesting a similar curvilinear relationship between referrer tenure and the likelihood of referral hire voluntary turnover. However, because longer-tenured employees generally bring in better performing referral hires, these better performers also may be more likely to leave for reasons outlined above in Hypothesis 2b. Given these contradicting notions, I do not hypothesize *a priori* an effect of referrer tenure on referral hires' turnover.

Referrer employment. Whether or not the referrer remains employed with the hiring organization is related to the referrer's accessibility to the new hire. Employee turnover itself can be an important predictor of existing employees' attitudes and behavior (Krackhardt & Porter, 1985, 1986; Lee & Mitchell, 1994; Maertz & Griffeth, 2004; Mobley, 1982; Mowday, Porter, & Steers, 1982; Staw, 1980; Steers & Mowday, 1981). Mowday et al. suggested that "the decision by individuals to leave an organization may also have implications for those

who remain” (1982, p. 146). Similarly, Lee and Mitchell, in their unfolding model of employee turnover, characterized a co-worker’s departure as a “shock to the system...a very distinguishable event that jars employees toward deliberate judgments about their jobs, and, perhaps, to voluntarily quit their job” (1994, p. 60). Others have found that co-worker turnover significantly affects remaining employees’ job attitudes (Brockner & Kim, 1993; Krackhardt & Porter, 1985; Krausz, Yaakobovitz, Bizman, & Caspi, 1999; Sheehan, 1991), performance (Castilla, 2005), and subsequent turnover (Fernandez et al., 2000; Krackhardt & Porter, 1986).

The two studies most relevant to referral hiring effects (Castilla, 2005; Fernandez et al., 2000) provided evidence of interdependence between referrer turnover and referral hires’ performance and turnover. Fernandez et al. (2000) found that referral hires also were likely to leave when their referrer left organization. Using Fernandez and colleague’s sample, Castilla (2005) demonstrated that referral hires’ performance decreased after their referrers left. These findings suggest that when a referrer leaves, the referral hire likely re-evaluates job attitudes, finds that losing a valuable relationship reduces the quality of the work environment, or learns about alternative job opportunities. Supporting the social enrichment notion, this work suggests that referrers are most beneficial when they are present (accessible), improving referral hires’ performance and making it less likely that they would voluntarily leave. I hypothesize:

Hypothesis 4a. Referral hire performance will be higher when the referrer remains employed than when the referrer terminates employment.

Hypothesis 4b. Likelihood of referral hire voluntary turnover will be lower when the referrer remains employed than when the referrer terminates employment.

Referrer-referral hire job congruence. An additional factor that affects the opportunity for referral hires to access their referrers is referrer-referral hire job congruence, or the degree of correspondence in the referral hire’s and referrer’s jobs. Based on social

comparison theory (Festinger, 1954), social identity theory (Ashforth & Mael, 1989; Tajfel & Turner, 1986), and the homophily principle (McPherson, Smith-Lovin, & Cook, 2001), individuals are more likely to interact with similar and proximal others. Therefore, more positive referral hire outcomes are likely if the referral hire has greater opportunity to seek out advice and support from the referrer.

Congruence based on organizational characteristics (e.g., team and work unit) can influence the referrer's post-hire accessibility, and, likewise, the degree to which the two parties potentially interact with each other—a notion supported by social resources theory (Lin, 2001). Differences in roles, leaders, and other workplace characteristics (e.g., schedules and office locations) affect the relevance of referrers' views in helping referral hires interpret organizational events. Moreover, congruent workplace characteristics can affect the proximity of referrers to referral hires, influencing their ability to interact. Under similar workplace conditions, referral hires will be more cognitively aware of referrers, affecting likelihood of access to their referrer. Job congruence (in this study's research setting, work on the same client program) is one workplace condition where referrer accessibility is greatest.

Based on the social enrichment perspective and social resources theory, I predict the following:

Hypothesis 5a: Referral hire performance will be higher under referrer-referral hire job congruence than under referrer-referral hire job incongruence.

Hypothesis 5b: Likelihood of referral hire voluntary turnover will be lower under referrer-referral hire job congruence than under referrer-referral hire job incongruence.

Method

Research Setting

A U.S. call center provided longitudinal data for customer service representatives (CSRs) from January 1, 2008, to December 31, 2009; this period serves as the 2-year observation window in my study. The company also provided CSRs' weekly performance

data. CSRs are entry-level employees paid by the hour to answer incoming customer calls about products or services, making CSRs the core occupational and revenue-generating group within the call center. General qualifications for CSR positions include a high school degree or GED, some computer experience, and customer service experience (6 months preferred). Company representatives indicated that most CSRs are high school graduates, attending college, roughly 18-24 years old, and Caucasian. New hires receive an average of 4.6 weeks (range = 2 to 10 weeks) of classroom training and spend an average of 3.5 weeks (range = 1 to 4 weeks) in a transitional program similar to on-the-job training. The company begins to monitor CSRs' performance during the transitional program.

The call center provides mainly inbound customer care services to multiple clients in various industries, such as healthcare, telecommunications, and travel. During the 2-year observation period, a total of 12 clients with 28 different client programs were serviced. Teams consisting of 10 to 30 CSRs service client programs, which involve separate client services, determined by geographic location (e.g., health insurance plans that tend to be specific to certain locations or policy holders) and/or type of service (e.g., billing or product information). While all CSRs respond to customer inquiries, their duties and job content vary by the client and client program they are servicing. For instance, CSRs working with telecommunication clients address customer questions about billing or service, whereas CSRs working with health insurance clients address sensitive issues concerning insurance claims. The jobs within the same client program also vary. For example, for a single health insurance client, one CSR may work with claims made by insurance plan participants, while another may deal directly with hospital claims. The physical structure allows for separation of CSRs by client, client program, and team.

Although the work in the call center is individualized, highly structured, and automated, which constrains the degree of worker interaction, this setting is still suitable for

testing my hypotheses (particularly those derived from the social enrichment and accessibility of social resources notions). Because the call center mainly deals with inbound calls, CSRs may have idle time waiting for the next call. The high ratio of CSRs to supervisors also makes it more likely a CSR would seek the support of a co-worker for help addressing customer issues and navigating the complex call center technologies (Deery, Iverson, & Walsh, 2010; Korczynski, 2003). Finally, the built-in referrer connection is likely important, as having a friend around makes the workplace more enjoyable (Sias & Cahill, 1998) and compensates for the routine and emotionally laborious call center environment.

Sample

During the 2-year study window, 1,688 CSRs were hired, and 34% ($N = 567$) indicated they were employee referrals. According to management, employee referrals are strongly encouraged and employees receive a bonus if their referral is hired. Furthermore, the referrer is not considered in hiring decisions. The majority of referral hires are typically friends or relatives of referrers, and they frequently are seen interacting before and after work and during breaks.

To investigate the baseline predictions in Hypotheses 1a and 1b, I used the full sample, less 3 CSRs for whom data were missing and 3 CSRs who failed to show up on the first day of work, for a final sample of 1,682 CSRs (566 referral hires and 1,116 non-referral hires). Next, to study the determinants of referral hires' outcomes as postulated in Hypotheses 2 to 5, I used data from 447 referral hires, whom I was able to match with their respective referrers.¹ I excluded 6 referrals whose referrer happened to start employment on the exact same day, leaving 441 referral hires available for analysis. Of these, I examined only the 386

¹ The number of matched referral hire-referrer pairs is lower than the number ($N = 567$) who indicated they were referred at the time of application for several possible reasons: (a) some referrals did not provide the name of their referrer, (b) the referrer may have been a former employee, or (c) they may have been referred by an employee outside the call center function (e.g., from an executive or support staff) for which I did not receive data access.

who were referred by on-site CSRs; the remaining were referred by team leaders or trainers ($N = 41$) and other CSRs working remotely from home ($N = 14$), for whom performance data were not available.

Dependent Variables

Performance. Because the call center tracks CSRs' weekly performance and rewards them for their week's performance, *week* is the time unit in the longitudinal analysis. I assessed performance with two criteria—*calls/hour* and *quality*. Calls/hour, or the average number of calls that a CSR could handle per hour in any given week, was calculated using average handle time (AHT), the time it takes, in seconds, to complete a call, including any hold, talk, and after-call work time necessary to address the customer's issue. AHT is the most important performance indicator in call centers (Lui & Batt, 2010). Not only does it drive the staffing level calculation, but speed in processing calls is critical to reducing costs per customer transaction (Callaghan & Thompson, 2001). AHT is calculated as a CSR's total call handle time in a given week divided by the total number of calls taken during that week; higher scores indicate lower productivity. Following Castilla (2005), I converted AHT to calls/hour so that higher scores represent better performance; I divided 3,600 (the number of seconds per hour) by a CSR's AHT. For instance, an AHT of 300 seconds (5 minutes) converts to a CSR being able to handle 12 calls/hour. My results were not substantially influenced by using calls/hour or AHT as the outcome variable.

The call center also rewards CSRs for excellence in servicing customers; thus, I examined quality as an additional performance criterion. Supervisors or other program managers randomly evaluate a CSR's quality an average of 2.8 times per week on a scale of 0 to 100. Clients determine the quality metrics and the overall weight given to quality for their programs, but, in general, CSRs are evaluated on accuracy, professionalism, and problem-solving skills.

Some CSRs terminated employment during training before their performance could be tracked, thus reducing the available sample for analysis. For analysis of performance—calls/hour, the available sample for Hypothesis 1a was 1,385 CSRs (297 CSRs terminated in training), and for Hypotheses 2a-5a, it was 329 (57 left during training). The available sample for analysis of performance—quality was slightly lower ($N = 1,274$ for testing Hypothesis 1a and $N = 305$ for testing Hypotheses 2a-5a), because in some cases, a CSR may have been out of training and handling calls, but left employment before a quality score was recorded.

Voluntary turnover. *Voluntary turnover* measured whether the CSR voluntarily terminated employment in any given week during his/her tenure. Based on an extensive set of termination descriptions, supervisors indicated whether CSRs quit voluntarily or involuntarily. In the full sample, 51% left voluntarily and 8.8% were terminated. In the sample of referral hires, 44% left voluntarily and 13.4% were terminated. I assigned a value of 1 to the week a CSR left voluntarily and 0 to weeks the CSR remained employed with the organization.

Independent Variables

Referral hire. In its online job application, the call center asks about an applicant's recruitment source. To test Hypotheses 1a and 1b, I created a dummy variable, *referral hire*, with 1 indicating the CSR was a referral hire and 0 indicating otherwise.

Referrer performance at hire. To assess referrer performance at hire, which was time-invariant, I included measures of a referrer's calls/hour and quality. *Referrer performance at hire—calls/hour* and *referrer performance at hire—quality* were averaged across the 4 weeks prior to the referral hire's starting week to obtain a reliable measurement. For example, if a referral hire started the first week of July 2009 (the week of July 6), the referrer's average calls/hour and quality were assessed for the 4 weeks prior (weeks of June 7, 14, 21, and 28).

Referrer tenure at hire. I measured *referrer tenure at hire* as number of weeks the referrer had been employed in the organization at the time the referral hire started. For instance, if the call center hired the referrer on January 1, 2008, and his or her referral hire on March 1, 2008, referrer tenure at hire would be 8 weeks. I used the natural logarithm of this variable to help normalize the positively skewed distribution that resulted because the majority of referrers were fairly new to the organization (30% of referrers were employed for 10 weeks or less).

Referrer employment. *Referrer employment* was coded as a time-varying dummy variable, coded as 1 if the referrer was employed in the call center during the given referral hire-observation week and 0 if the referrer was not employed in that week.

Referrer-referral hire job congruence. *Referrer-referral hire job congruence*, treated as a time-invariant variable, was based on whether the referral hire and referrer worked on the same client program at the start of the referral hire's employment. Because a CSRs' job content varies according to the assigned client program, co-worker interaction is most likely to occur between CSRs working in the same client program. For example, a CSR working on a telecommunications company's billing program would be less likely to seek assistance from a CSR working on the client's technical support program and more likely to approach another CSR who also works on the billing program. Referrer-referral hire job congruence was coded as 1 for those dyads who worked in the same client program and 0 otherwise. Only one referrer-referral hire dyad worked on the same team, so this aspect was not available for coding.

Covariates. All analyses controlled for several variables known to correlate with performance and likelihood of voluntary turnover. Dummy variables indicating a CSR's *team* were included in the analyses (but not reported in the tables due to space constraints) to account for differences in management practices across supervisors (1 team assigned per

supervisor) and to capture differences across client programs and clients. *Hours per week*, also time-varying, measured the number of hours a CSR worked each week and was included to account for the high degree of emotional labor inherent in customer service jobs that may lower performance, lead to burnout, and increase the likelihood of leaving (Cordes & Dougherty, 1993). Because pay is often related to performance and voluntary turnover (Gerhart & Rynes, 2003), I controlled for *pay rate*, a time-varying measure of a CSR's hourly wage rate in a given week. The call center began servicing a large client in June 2009, which required the firm to undergo a period of significant hiring for several months, during which hiring was 3 times greater than in the months prior. To account for any workforce conditions unique to this time (e.g., productivity losses, relaxed hiring standards to fill seats, and lower job satisfaction), I included the time-varying variable, *new client*, coded 1 for the weeks following June 1, 2009, and 0 otherwise. This variable was significantly correlated with performance ($r = -.16, p < .001$; Table 1) and voluntary turnover ($r = -.36, p < .001$; Table 1), confirming its inclusion (Becker, 2005).

Analyses of performance—calls/hour and quality—also included time-varying controls for a CSR's tenure and call volume. I included *tenure*, operationalized as weeks with the organization, as it positively influences performance (Ng & Feldman, 2010; Schmidt & Hunter, 1998). Because I used survival analysis, tenure was not included in the voluntary turnover analyses. *Call volume*, or the number of calls a CSR handled each week, was included because it varied across client programs and could influence a CSR's calls/hour and quality.

Finally, the referral bonus plan for which referrers were eligible also was controlled in analyses of referral hire outcomes (Hypotheses 2-5) to account for differential incentive effects between the two plans used. The payout structure and amount for the bonus plan changed in September 2008 from a payout of \$100 if the referral hire remained 45 days and

another \$100 if the referral hire remained 90 days, to a payout of \$15 every bi-weekly pay period if the referral hire remained past 60 days. Because the two bonus plans may motivate different referrer behavior (e.g., under the \$15 plan, referrers may be more likely to refer people who are expected to stay longer to maximize their payout), I included a dummy variable, *\$15 bonus plan*, coded as 1 if the referral hire was referred under the bi-weekly bonus plan and 0 for the prior plan.

Handling Missing Predictor Data

Because referrers could refer while in training, 32% of them did not have the full 4 weeks of performance data needed to create the referrer performance–calls/hour and performance–quality variables. Some referrers were in training when their referral hire started and had no prior performance data, while others had been out of training for fewer than 4 weeks (meaning only 1-3 weeks of prior performance data were available, but not a full 4 weeks). I imputed values for cases without a full 4 weeks of prior performance data.

To avoid the problems of bias and inefficiency associated with listwise and pairwise deletion and single imputation (Allison, 2002; Newman, 2003), I employed multiple imputation (MI) to fill in missing values for 123 cases of referrer performance at hire–quality and 103 cases of referrer performance at hire-calls/hour, as well as missing values for 2 referrer tenure at hire cases and 1 job congruence case. In MI, multiple values (typically 5-10) for each missing data point are imputed from relevant information about the observed data, resulting in the creation of multiple “completed” data sets. Each of these data sets is then analyzed, and the results are combined. I used Amelia II (Honaker, King, & Blackwell, 2006), a program for missing data that works within R, to perform the imputation step 10 times. This program uses a bootstrapping-based expectation-maximization algorithm and is advantageous for handling missing cross-sectional time-series data like this study’s data (Honaker & King, 2010). Because imputations of missing time-invariant variables (like

referrer performance at hire) can result in different values for each time point, I took the mean of the imputed values within each unit (referral hire) and set each performance-week observation to that value (Blackwell, 2010), then performed descriptive statistics, correlations, and analyses on the 10 imputed datasets.² To combine the results, I used STATA's MIRUBIN command, which applies Rubin's (1987) MI rules.

Analytical Strategies

Performance. I used the random effects (RE) model with maximum likelihood estimation (MLE) to analyze performance-calls/hour and quality. Because the Hausman (1978) specification test suggested unobserved heterogeneity in analyses of calls/hour and quality in tests of Hypothesis 1a-5a, the fixed effects (FE) model would typically be preferred to avoid biased and inconsistent estimators (Baltagi, 2008; Halaby, 2004; Hausman & Taylor, 1981). However, even though the FE model would avoid biases from omitted variables (e.g., ability and education), its drawback is its inability to estimate time-invariant variables (Baltagi, 2008; Hsiao, 2003; Wooldridge, 2002). The FE model uses only within-unit (CSR, in this study) variance for estimation and disregards the between-unit variance, excluding time-invariant variables. Because I was interested in the effects of time-invariant predictors, the FE model proved unsuitable. Thus, I used the RE model, consisting of performance-week observations nested in CSR. Using STATA's XTMIXED command with MLE, I regressed the longitudinal (cross-sectional time-series) performance data on the independent variables. This model is equivalent to a 2-level random intercept model described in multilevel modeling literature. The data were unbalanced. For the calls/hour criterion, the average number of week-performance observations was 20.5 for the full sample of CSRs and 21.4 for the referral hire sample. For quality, the full sample of CSRs averaged 18.8 performance-week observations, and the referral hire sample averaged 20.

² I ran the analyses with the complete data set without imputing missing values, and the results were similar.

In analyses of Hypotheses 2a-5a, I estimated a 3-level random intercept model (nesting week observations in referral hires and referral hires in referrers) to account for the fact that referral hires are clustered in referrers (referrers can recommend multiple new hires). Ignoring this dependency could lead to downwardly biased standard errors and, consequently, Type I errors (Bliese & Hanges, 2004; Kenny & Judd, 1986; Kenny & La Voie, 1985). I treated the level-3 (referrer effect) and level-2 (referral hire effect) intercepts as random and the slope coefficients of the level-1 and level-2 variables as fixed. Time-varying variables (e.g., pay rate, hours per week, and referrer employment) were included in level-1. Measures of referral bonus plan, referrer performance at hire, referrer tenure at hire, and referrer-referral hire job congruence were included in level-2 (and not level-3, or the referrer level) because they are measured specific to the referral hire's start date and could change for a subsequent referral hire.

Voluntary turnover likelihood. Because voluntary turnover is a binary variable, I used survival analysis, which models the probability of an employee leaving voluntarily over the duration of that person's employment in the firm, based on the influence of predictors. This method is advantageous in handling right-censored survival data (i.e., CSRs who do not leave voluntarily, including those who are fired and those who remain at the end of the study), because excluding right-censored data can increase the variance in estimates and lead to biased results (Singer & Willet, 2003). For instance, CSRs terminated by the organization are included in the survival analysis as a stayer up until they their termination date. Following termination, they drop out of the analysis. Survival analysis also allows for a variance in the probability of leaving voluntarily depending on a CSR's tenure

Following prior research (i.e., Trevor, 2001), I used proportional hazards survival analysis, or Cox regression (Cox, 1972). This approach is semi-parametric as it does not necessitate one to specify the form of the hazard function in advance (i.e., no distributional

assumptions are imposed on the data).³ To account for time-varying variables, the data set was configured into spells, resulting from creation of a new observation for an individual whenever a time-dependent covariate changes value, which could occur each week in this study. The Efron method for dealing with tied events (i.e., events that occur on the same date) was used. Finally, in tests of Hypotheses 2b-5b, I clustered the standard errors around referrers to obtain a robust variance estimate that accounts for within-referrer correlation (Rogers, 1993; Wooldridge, 2002).

Results

Table 1 presents descriptive statistics and correlations for the full sample of CSRs. Table 2 reports this information for referral hires. As shown in Table 1, CSRs had an average tenure of 21.77 weeks, received \$8.58 per hour, worked an average of 37.61 hours per week, handled an average of 141.79 calls per week, and had an average quality rating of 90.32%. Based on AHT, the average CSR could handle 7.41 calls per hour. Furthermore, there was a small correlation between calls/hour and quality ($r = .04$), indicating that productive workers were not necessarily high quality workers. This small association likely occurred because the call center's clients emphasize quality differently. During the study window, 51% of CSRs voluntarily quit—a rate consistent for outsourced call centers (Batt, Doellgast, Kwon, & Agrawal, 2005). These CSR characteristics did not substantially differ in the referral-hire-only sample (Table 2). For those variables used to predict referral hire outcomes (Hypotheses 2-5), referrers' average calls/hour was 8.84 and average quality rating was 85.5% upon their

³ The Cox model requires that the predictors be proportional to some unknown baseline hazard function across time (Singer & Willett, 2003). Because failure to account for these time-varying interactions can lead to attenuated results (Box-Steffensmeier & Jones, 2004), I examined this by regressing Schoenfeld residuals on survival time. A significant correlation would suggest that the predictor violates the assumption (Harrell, 2001; Singer & Willett, 2003). For the test of Hypothesis 1b results suggested that pay rate potentially violates the assumption. For tests of Hypotheses 2b-5b, which use referral-only data, pay rate and hours per week were found to violate the assumption. Because Singer and Willett's (2003) suggest including an interaction between the predictor(s) in question and time to deal with violations of proportionality, I examined models that included such interaction terms. I found that these analyses did not change the results of these models, so I present the models without these interactions in this study.

referral hire's start date. The average referrer tenure at hire was 65 weeks, 73% of referrers remained employed (or did not quit), and 18% of the referrer-referral hire dyads worked on the same client program. Finally, both tables also report the predicted reliability of current week-performance observations for the time-varying continuous variables. I calculated reliability by first computing the mean inter-week correlation for each variable and the average number of week-performance observations per employee, then entering these values into the Spearman-Brown prophecy formula.

In all analyses of performance—calls/hour and quality, I used Cook's D influence statistic (Cook, 1977) to exclude influential cases. The results of the hypothesis tests in the analysis of performance-calls/hour exhibited the greatest distortion and the decision to exclude these cases tended to result in more conservative estimates. Upon further investigation, these cases could be described as involving extremely high values of calls/hour that were based on few calls handled (e.g., a reported calls/hour of 360 based on 1 call handled), CSRs with only 1 week of recorded performance data (either as a result of them leaving or the study window ending), or instances of anomalies within individuals (i.e., a recorded calls/hour that deviated from the rest of that CSR's weekly calls/hour). The reduction in the number of performance-week observations across the analyses ranged from under 1% to 6.9%, with quality week-observations being reduced the most.

Baseline Predictions

I predicted that referral hires would perform better (Hypothesis 1a) and would be less likely to leave voluntarily (Hypothesis 1b) than non-referral hires. Table 3 reports the results for performance—calls/hour and quality and Table 4 for voluntary turnover. As shown in Table 3's Model 3, the coefficient for referral hire was positive and marginally significant ($b = .21, p = .06$) in the analysis of performance—calls/hour, providing marginal support for

Hypothesis 1a.⁴ From a practical standpoint, .1% incremental variance in performance explained by whether an employee was referred or not may seem trivial. However, considering the cumulative effect of this finding across time, the difference can be seen more readily. In a typical 40-hour work week, a referral hire, on average, can handle 8.4 more calls than a non-referral hire ($40 \times .21 = 8.4$), which can translate into a large savings for the firm when multiplied over a large number of weeks and employees. In terms of quality, referral hires did not have significantly higher quality in comparison to non-referral hires ($b = .58, p = .27$; Model 6 in Table 3). Finally, the results in Model 2 in Table 4 suggest that referral hires are slightly less likely ($b = -.14, p = .07$) to voluntarily leave in any given week than non-referral hires. The $-.14$ coefficient for referral hire in Model 2 suggests that referral hires were 13% ($[\exp(-.14) - 1] \times 100$) less likely to leave voluntarily than non-referral hires, providing marginal support for Hypothesis 1b.

Referrer Characteristic Effects

Tables 5, 6, and 7 present results for the effects of referrer characteristics on referral hires' calls/hour, quality, and propensity to leave. While results for each predictor variable are displayed in separate models, I used an omnibus model approach for hypothesis testing. Hypothesis 2a predicted that referral hires from high-performing referrers would be higher performers. This hypothesis was supported for referrer performance at hire-calls/hour, but not for referrer performance at hire-quality. The positive referrer-performance-at-hire-calls/hour coefficient was significantly related to referral hires' calls/hour ($b = .05, p = .03$; Model 5 in Table 5), meaning that increasing a referrer's calls/hour by 1 unit led to a .05 unit increase in a referral hire's calls/hour.⁵ Thus, referral hires from high-performing referrers (+1 *SD*) can handle approximately .19 more calls/hour than referral hires from average-

⁴ The referral hire coefficient is significant when the 109 influential cases (.4%) are included.

⁵ In models with 162 influential cases (2.4%) included, the referrer performance at hire-calls/hour and quality coefficients are larger ($b_{\text{referrer performance-calls/hour}} = 1.33, p < .001$ and $b_{\text{referrer performance-quality}} = 3.60, p > .05$).

performing referrers. No support was found for Hypothesis 2a in the analysis of quality (Model 5 in Table 6).

Hypothesis 2b proposed that referral hires from high performers would be more likely to leave. As shown in Table 7's Model 4, this hypothesis was supported for referrer performance at hire—calls/hour ($b = .06, p < .001$), but not for quality ($b = .003, p = .66$). The .06 referrer-performance-at-hire—calls/hour coefficient indicates that referral hires' likelihood of leaving increased 6.18% for each unit increase in a referrer's calls/hour. Referral hires from high-performers (+1 *SD*) were 23% more likely to leave than those from average-performers.

In support of Hypothesis 3, which proposed a curvilinear relationship between referrer tenure at hire and referral hire performance, the squared referrer-tenure-at-hire (logged) coefficient was negative and significant ($b = -.09, p = .02$; Model 5 in Table 5) in the analysis of calls/hour.⁶ The .50 logged referrer-tenure-at-hire coefficient ($p = .06$) represents the effect when logged referrer tenure is 0 (1 week, unlogged). Because logged coefficients are routinely interpreted in terms of percent change, this coefficient indicates that a 10% increase in referrer tenure from 0 is associated with a .05 increase in calls/hour ($.50 * [\ln[1.1]]$). The negative .09 squared referrer-tenure-at-hire (logged) coefficient can be interpreted as a .01 reduction in calls/hour for every 10% increase in referrer tenure.⁷ Thus, logged referrer tenure at hire one standard deviation above 0, or 1.39 (4 weeks, unlogged), results in a simple slope of .25, indicating a .02 calls/hour increase with a 10% increase in referrer tenure. The positive slope changes to negative at a logged referrer tenure of 2.77 (15 weeks, unlogged). Figure 2 graphs this relationship. Hypothesis 3 was not supported in the analysis of quality (Model 5

⁶ These coefficients were also affected by influential cases. The direction of the referrer-tenure-at-hire and its squared term changed in models that included 162 influential cases.

⁷ To interpret regression equations containing second-order terms (i.e., referrer tenure at hire squared), I followed Aiken and West (1991) and computed simple slopes for the curvilinear relationship (i.e., the simple slope for $\hat{Y} = b_1X + b_2X^2 + b_0$ was computed as $b_1 + 2b_2X$, where X was logged referrer tenure logged at hire).

in Table 6); and, even though I did not predict an effect of referrer tenure on referral hires' turnover propensity, I explored its linear effect post hoc and found no significant results (Model 5 in Table 7).

I proposed that referrer employment would be positively related to referral hire performance (Hypothesis 4a) and negatively related to referral hires' propensity to leave voluntarily (Hypothesis 4b). I did not find support for Hypothesis 4a. However, in the calls/hour analysis, the referrer-employment coefficient was significant but negatively related to referral hires' calls/hour ($b = -.20, p = .01$; Model 8 in Table 5), indicating that the number of calls/hour referral hires could handle was .20 units lower when the referrer remained employed than when the referrer terminated. Hypothesis 4b was supported, as the referrer-employment coefficient was negative and significantly associated with likelihood of voluntary referral hire turnover ($b = -.56, p = .02$; Model 7 in Table 7). Referral hires were 43% less likely to quit voluntarily as long as their referrer remained employed. Integrated, the results of Hypotheses 4a and 4b suggest that while retaining the referrer was beneficial in terms of retaining the referral hire, the referral hire's calls/hour was lower (but quality unaffected) when the referrer remained employed.

Hypotheses 5a and 5b predicted that referral hires would perform better and be less likely to voluntarily leave when their jobs were similar to those of their referrers. No support was found for these hypotheses. However, Model 8 in Table 5 shows that job congruence was significantly and negatively associated with referral hires' calls/hour ($b = -.45, p = .04$), indicating that when referrers' and referral hires' jobs were similar, the number of calls/hour referral hires could handle was reduced by .45 units. Job congruence also had a negative and significant effect on referral hires' quality ($b = -2.90, p = .03$; Model 8 in Table 6). Finally, referral hires' turnover propensity was unrelated to job congruence (Model 7 in Table 7).

Supplemental Analysis

I ran an additional analysis to determine whether the type of referral bonus plan in place explains the opposite findings regarding referrer employment and referrer-referral job congruence. The call center had recently changed from awarding referrers larger, lump-sum amounts after a specific period of referral hire tenure (the \$100 bonus plan) to a series of multiple, smaller payments continually awarded as long as both parties remained employed (the \$15 bonus plan). It is probable that under the latter plan, referrers have socialized more with their referral hires in ways that undermined performance. Rather than helping the referral hire perform better, referrers may have focused on helping referral hires enjoy the job, hoping their referral hire will remain longer, thus increasing the amount of bonus money they could earn. If this is true, the effects of referrer employment and referrer-referral hire job congruence on referral hire performance and turnover propensity should differ depending on the bonus plan in place.

The results for performance—calls/hour and quality and voluntary turnover are presented in Tables 8 and 9. Because the interactions of interest involved two dichotomous variables, I created 4 dummy variables for each condition. For example, to model the referrer employment-by-bonus plan interaction, I coded each of the following dummy variables as 1 if the condition applied and 0 otherwise: *referrer employed in \$15 bonus plan*, *referrer employed in \$100 bonus plan*, *referrer terminated in \$15 bonus plan*, *referrer terminated in \$100 bonus plan*. Moreover, because I was interested in the mean differences between the two bonus plans under the conditions of referrer employment and job congruence, *referrer employed in \$100 bonus plan* and *job congruence in \$100 bonus plan* were the reference categories. Under the \$15 bonus plan, when the referrer remained employed, referral hires were significantly less productive ($b = -.46$, $p = .02$; Model 1 in Table 8) and were slightly less likely to leave ($b = -.52$, $p = .09$; Model 1 in Table 9), but they also had marginally higher quality ($b = 2.13$, $p = .07$; Model 3 in Table 8) than when the referrer was employed

under the \$100 bonus plan. The job congruence findings were similar in the analyses of calls/hour and quality, but not significant (see Table 8). Under the \$15 bonus plan, referral hires with similar jobs as their referrer also had significantly lower turnover propensities ($b = -.93$, $p = .04$; Model 2 in Table 9) than those under the \$100 bonus plan.⁸

Discussion

The advantages of employee referrals are well-known in practice and have been demonstrated in research in a number of disciplines. However, a referrer perspective has been missing in the literature. Through a theoretical and empirical breakdown of referrer characteristics that influence referral hire outcomes, I have taken a longitudinal approach that endorses the benefit of referral hiring and demonstrates the accuracy of several theoretical predictions related to the referrer's quality (see Table 10 for a summary of the relationships tested and their findings). Referral hires from high-performing referrers performed better but had higher turnover propensities than those from low-performing referrers. Longer-tenured employees also produced high-performing referral hires, but the effect was negative at high levels of referrer tenure. I also found the effects of referrers' accessibility to be more nuanced than predicted, indicating that referrer accessibility may entail at cost. Referral hires were less likely to leave as long as their referrer remained employed, but their performance was lower under this condition. Similarly, referral hires performed at lower levels when their job was congruent with their referrer's job. The results of my supplemental analyses regarding the bonus plan in place also suggest that emphasizing the context will better inform inferences.

⁸ One could also run the models separately by the type of bonus plan, as the Chow test ($p < .001$) indicated that the difference in two subgroups' sets of coefficients was statistically significant (Schenker & Gentleman, 2001) in analyses of performance (calls/hour and quality) and voluntary turnover. The results (not shown here) were in support of those presented in Table 8 and 9. They suggested that the negative effects of referrer employment ($p < .001$) and job congruence ($p = .04$) on referral hire calls/hour were stronger under the \$15 bonus plan than the \$100 bonus plan. However, in the analyses of referral hire quality, the negative effect of job congruence was statistically stronger ($p = .03$) under the \$100 bonus plan than the \$15 bonus plan. The negative referrer employment effect was also statistically stronger ($p = .01$) under the \$15 bonus plan than the \$100 bonus plan.

Finally, my findings and their implications should be considered in relation to their small effect sizes.

Theoretical Implications

My study has several theoretical implications. First, my work extends prior work by providing theoretical insight into *how* theories from two disciplines (better match account and social enrichment perspective) affect referral hire outcomes concurrently through a model of referrer characteristics. By conceptualizing referrers as social resources, the findings reported here deepen our knowledge of relevant referrer characteristics that influence referral hire outcomes and underscore the need for integrated theoretical models of this phenomenon.

Second, my study takes a step forward in understanding referral hiring because it illustrates nuances that highlight limitations of the revised theories. While my study provides additional evidence (albeit of small magnitude) of the referrer performance effect on that of the referral hire performance (which supports the better match account and extends the work of Yukovich and Lup [2006] who found evidence of the effect during the pre-hire stage), it suggests that referrer performance also influences referral hire turnover. My results suggest that the effect may work to a firm's disadvantage, as referral hires from high-performing employees had a higher propensity to leave. This finding indicates that there may be a tradeoff regarding the notion that high performers will refer better employees; that is, these hires may perform better but are more likely to leave. Research is warranted to understand when this tradeoff occurs (e.g., the labor market context may help explain this tradeoff).

My findings also point to the overly simplistic nature of the social enrichment perspective. The assumption is that social enrichment benefits the employer, and Hypotheses 4 and 5 tested this notion. While I found partial support for this, in that referral hires were less likely to leave as long as their referrers remained employed, my findings (albeit of small magnitude) showed that referral hires' performance was lower when their referrers were

employed and when they had jobs similar to those of their referrers. Thus, not all outcomes from social enrichment may be conducive to the employer, a notion offered by Ullman (1966), but largely ignored. Ullman noted that some firms avoid the problems of cliques by not hiring through referrals. However, the bonus plan scheme in place (at least in the call center under study) may potentially be driving the negative effects of greater referrer accessibility. Referral bonus schemes paid out in smaller increments across time may motivate referrers to socialize with their referral hires in ways detrimental to their productivity. Future work is needed to theoretically disentangle how and why referral bonus schemes motivate referrer behavior and when social enrichment will work in the firm's favor and when it will not.

Practical Implications

My results suggest that organizations should actively seek employee referrals. Referral hires in my sample handled, on average, 2.4% more calls/hour than non-referrals, similar to the percent advantage reported by Castilla (2005). While this effect may be small in a single week, over time its magnitude increases (Abelson, 1985). Considering that 34% of the workforce sampled in this study consisted of referral hires, the .21 coefficient reported in Table 3 means referral hires are able to handle approximately 119 calls/hour more than the same number of non-referral hires, or 4,762 calls in a 40-hour week. This can have a substantial impact on the call center's operation costs. Referral hires also were 13% less likely than non-referral hires to voluntarily quit at any point in their tenure. Organizational tactics for increasing the number of referrals include the use of referral bonuses, non-monetary rewards (e.g., gift cards and trips), and educating employees to better recruit individuals in their social networks.

This study also offers evidence-based guidance on ways organizations can maximize the benefits of referral hiring. For example, when positions open up, organizations should

proactively seek referrals from their high performing employees, who are likely to refer high-quality candidates, who in turn will produce high quality, cost-effective work. For instance, if 10% of referral hires in the call center are from low performers ($-1\ SD$) and the firm instead hired the same number of referrals from high performers ($+1\ SD$), these new hires, collectively, could handle 18,491 more calls (based on an average tenure of 23.22 weeks and 37.72 hours/week, Table 2). Estimated savings will further increase as the costs related to recruiting, hiring, and training employees also are considered. Organizations also should look for referrals from longer-tenured employees, at least those not too far removed from the entry stage of employment.

Finally, my findings caution against jumping to the conclusion that all referrals will perform better and stay longer; they also highlight the potential costs of referral hiring. Because referral hires from high-performing referrers also are more likely to leave voluntarily, one way to counteract this effect would be to follow up with referrals immediately after their referrer leaves and encourage them to stay. Another option to help retain high performers would be to offer a performance-based bonus to employees if they remain for a certain period of time. Because my findings indicated that referral hires perform less effectively under conditions of greater referrer accessibility, designers and managers of employee referral programs should consider offering supplemental rewards to referrers whose referral hires turn out to be top performers to possibly prevent referrers from distracting the referral hires.

Limitations and Future Research

A number of limitations should be considered. Due to access constraints placed on available data used in the study, the models did not account for employee demographics (e.g.,

age and gender) and other human capital variables known to influence performance and voluntary turnover. Such unobserved heterogeneity may bias the results reported here.⁹

Second, many of the findings in the analyses of quality were in the predicted direction, but not significant. A number of factors may explain the lack of significant effects, including the subjective nature of the quality ratings, the low level of monitors each week ($M = 2.8$ monitors), and the differential importance of quality across clients. Also, one third of the full sample achieved quality ratings of 100%, indicating possible rater leniency bias or legitimately high quality scores on most calls. This skew may lead to underestimation of the “true” relationship between referrer characteristics and referral hire quality. These factors also may explain why the quality measure of referrer performance was unrelated to referral hire outcomes. In addition, a significant proportion of this study’s referrers were relatively new hires themselves (likely with little variability in job knowledge and experience). Thus, the results of the curvilinear referrer tenure-referral hire performance relationship may be understated and also not generalizable to other settings where newcomers refer less frequently.

Third, I acknowledge that referrer employment and referrer-referral hire job congruence are coarse measures of the accessibility construct. Although management confirmed that most employees referred friends or relatives and that social interaction most likely occurred when referrers and referral hires worked on the same client program (due to physical proximity and similar schedules), perceptual measures of the degree to which referral hires actually access their referrers may provide for stronger tests. Social network

⁹ To alleviate this concern, I checked the robustness (in analyses not shown here) of the performance results reported in Tables 3, 5 and 8, using fixed effects vector decomposition (FEVD; Plümper & Troeger, 2007, 2011), a 3-stage method to estimate the effects of time-invariant variables that avoids biases due to unobserved heterogeneity (STATA code is available at <http://www.polsci.org/pluemperssc.html>). Due to its rarity in management research, warnings about covariance matrix errors (Breusch, Ward, Nguyen, & Kompass, 2011; Greene, 2011), and its inability to account for the 3-level nesting, I only used this approach to evaluate if my results are affected. As the results using this method were relatively unchanged, unobserved heterogeneity likely is non-problematic.

research also suggests that the strength of the relationship (Granovetter, 1973) between the referrer and referral hire affects interaction; thus, integrating this construct would provide a fruitful moderator of the relationship between referrer accessibility and referral hire outcomes. In addition, as a referral hire becomes socially embedded in the workforce and establishes additional social resources, the effects of referrer accessibility may weaken. While not presented here, I examined whether the effects of referrer employment and job congruence weakened across a referral hire's tenure and found that the effect of referrer employment did decay for calls/hour but not quality or voluntary turnover.

Fourth, my measure of job congruence is likely confounded by the proximity between referrers and referral hires. Thus, the negative effect of job congruence may actually be a function of the pair working more closely and distracting each other. Because CSR workstations are physically positioned according to client programs, it was not possible to disentangle the effect of proximity from job congruence in my sample.

Fifth, the generalizability of my findings may be limited to a narrow range of referral hire settings and to the call center environment. For instance, I examined same position-level referrer-referral hire dyads, but referral hire outcomes may depend on the referrer's job level. Because my sample did contain referral hires from team leaders and trainers, I was able to test this notion. I found no significant differences between referral hires from CSR-referrers and those from upper-level referrers across the three referral hire outcomes. These insignificant results could be due in part to the low sample size of upper-level referrers and/or to the fact that the upper-level positions examined were, in essence, only one job level higher. More research is needed on the referrer's job level, as this construct may serve as an additional measure of referrer quality and offer insight into the efficacy of the revised theory's predictions. Additionally, future research should examine the effects of referrer characteristics in non-low-wage/low-skill settings. For example, referrers in this setting may

not have strong self-interest in protecting their reputations and may refer someone simply for the sake of improving the social environment. The low-wage/low-skill setting in my study also possibly explains the finding that high-performing referrers were associated with referral hires who performed better but were also more likely to leave. In such settings, high-performers likely have alternative job opportunities, making it more difficult for firms to retain them. It would also be interesting to test the generalizability of referrer characteristics effects in a “chain” of referral hires (where employee A refers employee B, who then refers employee C) to see if there are lasting effects of the initial referrer.

Finally, my study does not account for referrer motivation in referring. Although two studies (Shinnar, Young, & Meana, 2004; Van Hove, 2013) have investigated intrinsic (e.g., desire to have a friend) and extrinsic (e.g., referral bonus) determinants of referring, research has yet to consider how these, and their interaction, may uniquely predict referral hire outcomes. For instance, high referral bonuses may motivate employees to refer anyone, regardless of quality, to simply getting more money. On the other hand, if referrers are motivated by the organization’s best interests, they should be likely to refer high-quality candidates who will succeed. Research developing and testing theories about referrer motivations will fill a large gap in the literature. My own results show that the structure of the referral bonus plan may play a role in motivating referrer behavior. Specifically, when the bonus amount is awarded in small increments over time and as long as the referrer and referral hire are both still employed (the \$15 bonus plan), the referral hire’s propensity for turnover is lower but he/she also tends to perform at a lower level.

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Table 1

Descriptive Statistics and Correlations for Full Sample (Hypothesis 1)

Variable	$N_{\text{ind.}}$	$N_{\text{week-obs.}}$	Mean	SD	1	2	3	4	5	6	7	8
1 Performance–Calls/Hour	1,308	26,801	7.41	3.70	(.84)							
2 Performance–Quality	1,181	22,185	90.32	12.47	.04	(.94)						
3 Call Volume	1,308	26,801	141.79	72.22	.48	.00	(.89)					
4 Voluntary Turnover ^a	1,682	36,177	.51	.50	.06	-.12	-.01					
5 Tenure ^a	1,682	36,177	21.77	20.36	.26	.20	.19	-.22				
6 Pay Rate	1,682	36,177	8.58	.83	.13	-.14	.13	-.02	.31	(.99)		
7 Hours Per Week	1,682	36,177	37.61	6.01	-.07	.06	.18	-.13	-.06	-.08	(.91)	
8 New Client	1,682	36,177	.48	.50	-.16	.06	-.16	-.36	.14	.00	.11	
9 Referral Hire ^a	1,682	36,177	.34	.47	.02	.02	.01	-.04	-.02	-.04	.01	.00

Note. Reliability of time-varying, objective variables reported in diagonal. Correlations are based on $N_{\text{week-obs.}}$; I used the pairwise deletion method with the sample size for each correlation equaling the smaller of the two $N_{\text{week-obs.}}$. Correlations whose absolute values are greater than .01 are statistically significant at $p < .05$.

^a Means and standard deviations are reported for individual-level data ($N_{\text{individuals}}$); time-varying information (e.g., performance) were averaged within individuals before they were averaged across individuals.

Table 2

Descriptive Statistics and Correlations for Referral Hire Sample (Hypotheses 2-5)

Variable	$N_{\text{ind.}}$	$N_{\text{week-obs.}}$	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Performance—Calls/Hour	307	6,558	7.31	2.67	(.96)												
2 Performance—Quality	284	5,689	91.10	12.14	-.01	(.97)											
3 Call Volume	307	6,885	144.02	70.58	.58	-.04	(.80)										
4 Voluntary Turnover ^a	386	8,920	.44	.50	.04	-.17	.01										
5 Tenure ^a	386	8,920	23.22	20.83	.35	.21	.15	-.22									
6 Pay Rate	386	8,920	8.54	.78	.18	-.15	.09	-.08	.31	(.98)							
7 Hours Per Week	386	8,920	37.72	5.84	-.08	.09	.17	-.11	-.03	-.16	(.86)						
8 \$15 Bonus Plan ^a	386	8,920	.66	.47	-.31	-.02	-.16	-.22	-.34	-.19	.10						
9 New Client	386	8,920	.46	.50	-.14	.07	-.13	-.31	.20	-.01	.12	.55					
10 Referrer Performance at Hire—Calls/Hour ^a	386	8,920	8.84	3.77	.10	.00	.09	.12	.01	-.01	.00	-.06	-.14				
11 Referrer Performance at Hire—Quality ^a	386	8,920	85.50	12.05	.05	.01	.02	-.05	-.03	-.09	.02	.02	.05	-.07			
12 Referrer Tenure at Hire ^{ab}	386	8,920	64.94	102.41	-.09	.02	.02	-.06	.00	.00	.03	.16	.10	-.02	.31		
13 Referrer Employment ^a	386	8,920	.73	.44	-.13	-.09	-.03	.02	-.38	-.15	.07	.18	.01	-.09	.22	.18	
14 Referrer-Referral Hire Job Congruence ^a	386	8,920	.18	.38	-.10	-.20	-.08	.11	-.06	.15	-.04	.06	.04	.00	-.12	-.09	.02

Note. Reliability of time-varying, objective variables reported in diagonal. Correlations are based on $N_{\text{week-obs}}$; I used the pairwise deletion method with the sample size for each correlation equaling the smaller of the two $N_{\text{week-obs}}$. Correlations whose absolute values are greater than .02 are statistically significant at $p < .05$.

^a Means and standard deviations are reported for individual-level data ($N_{\text{individuals}}$); time-varying information (e.g., performance) were averaged within individuals before they were averaged across individuals.

^b Referrer tenure at hire reported in its natural metric.

Table 3

Performance Regressed on Recruitment Source (Hypothesis 1a)

Variable	<u>Performance–Calls/Hour</u>			<u>Performance–Quality</u>		
	M1	M2	M3	M4	M5	M6
Intercept	6.62*** (0.075)	3.72*** (0.541)	3.63*** (0.542)	87.53*** (0.329)	75.03*** (2.498)	74.82*** (2.505)
Call Volume		0.01*** (0.000)	0.01*** (0.000)		-0.00* (0.001)	-0.00* (0.001)
Tenure		0.04*** (0.002)	0.04*** (0.002)		0.10*** (0.007)	0.10*** (0.007)
Pay Rate		0.27*** (0.044)	0.27*** (0.044)		-0.67*** (0.186)	-0.67*** (0.186)
Hours Per Week		-0.05*** (0.003)	-0.05*** (0.003)		0.01 (0.013)	0.01 (0.013)
New Client		-0.96*** (0.061)	-0.96*** (0.061)		-0.58* (0.248)	-0.58* (0.248)
Referral Hire			0.21† (0.111)			0.58 (0.516)
$N_{\text{week-observations}}$	26,801	26,801	26,801	22,185	22,185	22,185
$N_{\text{individuals}}$	1,308	1,308	1,308	1,181	1,181	1,181
$N_{\text{referral hires}}$	450	450	450	404	404	404
Level 1 Variance Component	6.630	5.173	5.173	79.29	72.28	72.28
Level 2 Variance Component	6.756	3.081	3.068	116.85	60.32	60.25
Snijders and Bosker's (1999) $Pseudo R^2$		0.383	0.384		0.324	0.324

Note. Analyses use maximum likelihood random effects estimation. Standard errors in parentheses. Models control for Team.

* $p < .05$; ** $p < .01$; *** $p < .001$. 2-tailed tests reported.

Table 4

Proportional Hazards Regression Analysis of Voluntary Turnover (Hypothesis 1b)

Variable	M1	M2
Pay Rate	-0.33*** (0.000)	-0.33*** (0.000)
Hours Per Week	-0.14*** (0.000)	-0.14*** (0.000)
New Client	0.10 (0.321)	0.09 (0.342)
Referral Hire		-0.14† (0.066)
Log-likelihood	-4,922.52	-4,920.81
Likelihood-ratio χ^2	1,652.75***	1,656.17***
Likelihood-ratio test from Model 1		3.42†

Note. Raw coefficients are reported. Standard errors in parentheses. Models control for Team. Efron method used to deal with tied failure events (i.e., turnover and censored events that occurred on the same date).

$N_{\text{week-observations}} = 36,177$; $N_{\text{individuals}} = 1,682$; $N_{\text{turnover events}} = 853$; $N_{\text{referral hires}} = 566$

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$. 2-tailed tests reported.

Table 5

Referral Hire Performance—Calls/Hour Regressed on Referrer Characteristics (Hypotheses 2a, 3, 4a, and 5a)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Intercept	6.57*** (0.124)	5.98*** (0.646)	5.36*** (0.912)	5.47*** (0.757)	4.36*** (0.999)	6.08*** (0.647)	6.10*** (0.648)	6.20*** (0.649)	4.77*** (1.006)
Call Volume		0.01*** (0.000)	0.01*** (0.000)	0.01*** (0.000)	0.01*** (0.000)	0.01*** (0.000)	0.01*** (0.000)	0.01*** (0.000)	0.01*** (0.000)
Pay Rate		0.02 (0.054)	0.02 (0.054)	0.02 (0.054)	0.03 (0.054)	0.03 (0.054)	0.02 (0.054)	0.03 (0.054)	0.04 (0.054)
Tenure		0.05*** (0.002)	0.05*** (0.002)	0.05*** (0.002)	0.05*** (0.002)	0.05*** (0.002)	0.05*** (0.002)	0.05*** (0.002)	0.05*** (0.002)
Hours Per Week		-0.04*** (0.004)	-0.04*** (0.004)	-0.04*** (0.004)	-0.04*** (0.004)	-0.04*** (0.004)	-0.04*** (0.004)	-0.04*** (0.004)	-0.04*** (0.004)
\$15 Bonus Plan		-0.34† (0.189)	-0.33† (0.188)	-0.28 (0.191)	-0.26 (0.189)	-0.36† (0.189)	-0.33† (0.187)	-0.35† (0.188)	-0.26 (0.188)
New Client		-1.23*** (0.076)	-1.22*** (0.076)	-1.22*** (0.076)	-1.22*** (0.076)	-1.20*** (0.076)	-1.23*** (0.076)	-1.20*** (0.076)	-1.19*** (0.076)
Referrer Performance at Hire—Calls/Hour			0.04† (0.022)		0.05* (0.022)				0.05* (0.022)
Referrer Performance at Hire—Quality			0.00 (0.007)		0.01 (0.007)				0.01 (0.007)
Referrer Tenure at Hire (Log)				0.44 (0.266)	0.50† (0.266)				0.46† (0.265)
Referrer Tenure at Hire (Log) Squared				-0.08* (0.039)	-0.09* (0.039)				-0.09* (0.039)
Referrer Employment						-0.20**		-0.20**	-0.20**

(0.074) (0.074) (0.074)

(Continued)

Table 5 (Continued)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Referrer-Referral Hire Job Congruence							-0.44*	-0.45*	-0.48*
							(0.214)	(0.215)	(0.216)
Level 1 Variance Component	2.839	1.575	1.575	1.575	1.575	1.572	1.575	1.573	1.573
Level 2 Variance Component	3.340	1.301	1.313	1.276	1.284	1.342	1.268	1.312	1.288
Level 3 Variance Component	.796	.539	.498	.525	.473	.505	.536	.497	.440
Snijders and Bosker's (1999) <i>Pseudo R</i> ²		.510	.515	.516	.522	.510	.516	.515	.527

Note. Calls/Hour performance-week observations ($N = 6,558$) are nested in referral hires ($N = 307$) who are nested in referrers ($N = 254$). Analyses use 3-level random intercept modeling with maximum likelihood estimation. Standard errors in parentheses. Models control for Team.

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$. 2-tailed tests reported.

Table 6

Referral Hire Performance–Quality Regressed on Referrer Characteristics (Hypotheses 2a, 3, 4a, and 5a)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Intercept	87.52*** (0.735)	72.00*** (4.635)	67.49*** (5.875)	71.50*** (5.187)	67.67*** (6.389)	71.63*** (4.639)	72.96*** (4.649)	72.59*** (4.654)	69.68*** (6.469)
Call Volume		0.00 (0.002)	-0.00 (0.002)	0.00 (0.002)	-0.00 (0.002)	0.00 (0.002)	-0.00 (0.002)	-0.00 (0.002)	-0.00 (0.002)
Pay Rate		-0.70* (0.349)	-0.69* (0.349)	-0.71* (0.349)	-0.70* (0.349)	-0.74* (0.350)	-0.70* (0.349)	-0.74* (0.350)	-0.73* (0.350)
Tenure		0.10*** (0.013)	0.10*** (0.013)	0.10*** (0.013)	0.09*** (0.013)	0.10*** (0.014)	0.10*** (0.013)	0.10*** (0.014)	0.10*** (0.014)
Hours Per Week		0.01 (0.024)	0.01 (0.024)	0.01 (0.024)	0.01 (0.024)	0.01 (0.024)	0.01 (0.024)	0.01 (0.024)	0.01 (0.024)
\$15 Bonus Plan		2.43* (1.124)	2.39* (1.122)	2.27* (1.135)	2.29* (1.134)	2.47* (1.123)	2.47* (1.119)	2.51* (1.119)	2.45* (1.131)
New Client		-0.73 (0.489)	-0.71 (0.489)	-0.72 (0.489)	-0.71 (0.490)	-0.84† (0.494)	-0.72 (0.489)	-0.83† (0.493)	-0.80 (0.494)
Referrer Performance at Hire– Calls/Hour			0.09 (0.124)		0.09 (0.124)				0.08 (0.123)
Referrer Performance at Hire– Quality			0.04 (0.039)		0.03 (0.041)				0.02 (0.042)
Referrer Tenure at Hire (Log)				0.12 (1.524)	0.20 (1.528)				0.19 (1.525)
Referrer Tenure at Hire (Log) Squared				0.03 (0.225)	0.00 (0.226)				-0.01 (0.225)
Referrer Employment						0.83†		0.78	0.76

(0.498) (0.498) (0.500)

(Continued)

Table 6 (Continued)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Referrer-Referral Hire Job							-2.98*	-2.90*	-2.68*
Congruence							(1.294)	(1.294)	(1.323)
Level 1 Variance Component	69.696	63.505	63.501	63.508	63.504	63.482	63.475	63.452	63.454
Level 2 Variance Component	135.108	52.272	51.966	52.039	51.841	52.111	51.704	51.598	51.365
Level 3 Variance Component	6.459	.000	.000	.000	.000	.000	.000	.000	.000
Snijders and Bosker's (1999)									
<i>Pseudo R</i> ²		.452	.453	.453	.454	.453	.455	.455	.457

Note. Quality performance-week observations ($N = 5,689$) are nested in referral hires ($N = 284$) who are nested in referrers ($N = 237$). Analyses use 3-level random intercept modeling with maximum likelihood estimation. Standard errors in parentheses. Models control for Team.

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$. 2-tailed tests reported.

Table 7

Proportional Hazards Regression Analyses of Referral Hire Voluntary Turnover Regressed on Referrer Characteristics (Hypotheses 2b, 4b, and 5b)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Pay Rate	-1.08*** (0.295)	-1.10*** (0.293)	-1.10*** (0.296)	-1.12*** (0.297)	-1.06*** (0.300)	-1.08*** (0.295)	-1.06*** (0.300)	-1.10*** (0.305)
Hours Per Week	-0.16*** (0.009)	-0.17*** (0.009)	-0.16*** (0.009)	-0.17*** (0.009)	-0.16*** (0.009)	-0.16*** (0.009)	-0.16*** (0.009)	-0.17*** (0.009)
\$15 Bonus Plan	-0.53 (0.287)	-0.65* (0.285)	-0.56* (0.284)	-0.67* (0.284)	-0.50 (0.290)	-0.53 (0.287)	-0.50 (0.290)	-0.64* (0.284)
New Client	0.65* (0.283)	0.78** (0.292)	0.65* (0.283)	0.78** (0.292)	0.67* (0.287)	0.65* (0.283)	0.67* (0.289)	0.78** (0.294)
Referrer Performance at Hire–Calls/Hour		0.06*** (0.016)		0.06*** (0.016)				0.06*** (0.017)
Referrer Performance at Hire–Quality		0.00 (0.007)		0.00 (0.008)				0.01 (0.008)
Referrer Tenure at Hire (Log)			0.05 (0.064)	0.04 (0.068)				0.06 (0.070)
Referrer Employment					-0.56* (0.232)		-0.56* (0.232)	-0.58* (0.239)
Referrer-Referral Hire Job Congruence						0.00 (0.222)	-0.02 (0.225)	0.07 (0.240)
Wald χ^2	782.07***	876.34***	803.75***	904.81***	759.91***	783.90***	762.14***	906.55***

Note. Raw coefficients are reported. Standard errors in parentheses. Models control for Team. Efron method used to deal with tied failure events (i.e., turnover and censored events that occurred on the same date). Standard errors are clustered around referrers ($N = 305$) to account for correlation within referrers. Wald χ^2 model tests reported, as Likelihood ratio χ^2 model tests are inappropriate when standard errors are clustered (Sribney, 2005).

$N_{\text{week-observations}} = 8,920$; $N_{\text{individuals}} = 386$; $N_{\text{turnover events}} = 170$.

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$. 2-tailed tests reported.

Table 8

Supplemental Analysis of Referral Hire Performance Regressed on Referrer Accessibility Characteristics by Referral Bonus Plan Interaction

Variable	<u>Performance–Calls/Hour^a</u>		<u>Performance–Quality^b</u>	
	Model 1	Model 2	Model 3	Model 4
Intercept	5.92*** (0.647)	5.78*** (0.706)	72.63*** (4.644)	69.46*** (4.958)
Call Volume	0.01*** (0.000)	0.01*** (0.000)	0.00 (0.002)	-0.00 (0.002)
Tenure	0.05*** (0.002)	0.05*** (0.002)	0.10*** (0.014)	0.09*** (0.013)
Pay Rate	0.04 (0.054)	0.02 (0.054)	-0.72* (0.350)	-0.70* (0.349)
Hours Per Week	-0.04*** (0.004)	-0.04*** (0.004)	0.00 (0.024)	0.01 (0.024)
New Client	-1.23*** (0.076)	-1.23*** (0.075)	-0.91 (0.495)	-0.70 (0.488)
Referrer Employed in \$100 Bonus Plan	--		--	
Referrer Employed in \$15 Bonus Plan	-0.46* (0.191)		2.13† (1.140)	
Referrer Termed in \$15 Bonus Plan	0.11 (0.211)		2.44† (1.291)	
Referrer Termed in \$100 Bonus Plan	-0.03 (0.093)		-1.53* (0.621)	
Job Congruence in \$100 Bonus Plan		--		--
Job Congruence in \$15 Bonus Plan		-0.51 (0.403)		3.52 (2.444)

Job Dissimilar in \$15 Bonus Plan		0.02		5.73**
		(0.342)		(2.078)
Job Dissimilar in \$100 Bonus Plan		0.30		3.65†
		(0.344)		(2.065)
Level 1 Variance Component	1.568	1.575	63.420	63.473
Level 2 Variance Component	1.376	1.255	52.487	51.879
Level 3 Variance Component	.468	.550	.000	.000
Snijders and Bosker's (1999) <i>Pseudo R</i> ²	.511	.515	.451	.454

Note. Analyses use 3-level random intercept modeling with maximum likelihood estimation. Standard errors in parentheses. Models control for Team.

^a *N*_{week observations} (N = 6,558) are nested in referral hires (N = 307) who are nested in referrers (N = 254).

^b *N*_{week observations} (N = 5,689) are nested in referral hires (N = 284) who are nested in referrers (N = 237).

†*p* < .10; **p* < .05; ***p* < .01; ****p* < .001. 2-tailed tests reported.

Table 9

Supplemental Proportional Hazards Regression Analyses of Referral Hire Voluntary Turnover Regressed on Referrer Accessibility Characteristics by Referral Bonus Plan Interaction

Variable	Model 1	Model 2
Pay Rate	-1.06*** (0.300)	-1.10*** (0.298)
Hours Per Week	-0.16*** (0.009)	-0.16*** (0.009)
New Client	0.67* (0.288)	0.64* (0.286)
Referrer Employed in \$100 Bonus Plan (Reference)	--	
Referrer Employed in \$15 Bonus Plan	-0.52† (0.308)	
Referrer Termed in \$15 Bonus Plan	0.08 (0.390)	
Referrer Termed in \$100 Bonus Plan	0.52† (0.313)	
Job Congruence in \$100 Bonus Plan (Reference)		--
Job Congruence in \$15 Bonus Plan		-0.93* (0.452)
Job Dissimilar in \$15 Bonus Plan		-0.70* (0.324)
Job Dissimilar in \$100 Bonus Plan		-0.21 (0.253)
Wald χ^2	775.96***	800.03***

Note. Raw coefficients are reported. Standard errors in parentheses. Models control for Team. Efron method used to deal with tied failure events (i.e., turnover and censored events that occurred on the same date). Standard errors are clustered around referrers ($N = 305$) to account for correlation within referrers. Wald χ^2 model tests reported, as Likelihood ratio χ^2 model tests are inappropriate when standard errors are clustered (Sribney, 2005).

$N_{\text{week-observations}} = 8,920$; $N_{\text{individuals}} = 386$; $N_{\text{turnover events}} = 170$

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$. 2-tailed tests reported.

Table 10

Summary of Findings

Hypothesis	Independent Variable	Dependent Variable	Predicted Relationship	Finding
<u>Baseline Predictions</u>				
1a	Recruitment Source	Calls/Hour	Positive	Marginally Supported
1a	Recruitment Source	Quality	Positive	Not Supported
1b	Recruitment Source	Voluntary Turnover	Negative	Marginally Supported
<u>Referrer Characteristic Effects</u>				
2a	Referrer Performance at Hire	Calls/Hour	Positive	Supported
2a	Referrer Performance at Hire	Quality	Positive	Not Supported
2b	Referrer Performance at Hire	Voluntary Turnover	Positive	Supported
3	Referrer Tenure at Hire	Calls/Hour	Curvilinear	Supported
3	Referrer Tenure at Hire	Quality	Curvilinear	Not Supported
4a	Referrer Employment	Calls/Hour	Positive	Not Supported ^a
4a	Referrer Employment	Quality	Positive	Not Supported
4b	Referrer Employment	Voluntary Turnover	Negative	Supported
5a	Job Congruence	Calls/Hour	Positive	Not Supported ^a
5a	Job Congruence	Quality	Positive	Not Supported ^a
5b	Job Congruence	Voluntary Turnover	Negative	Not Supported

^a Relationship was significant, but in the opposite direction of the predicted hypothesis.

Figure 1

Relationship Between Referrer Quality and Post-Hire Accessibility and Referral Hire Outcomes

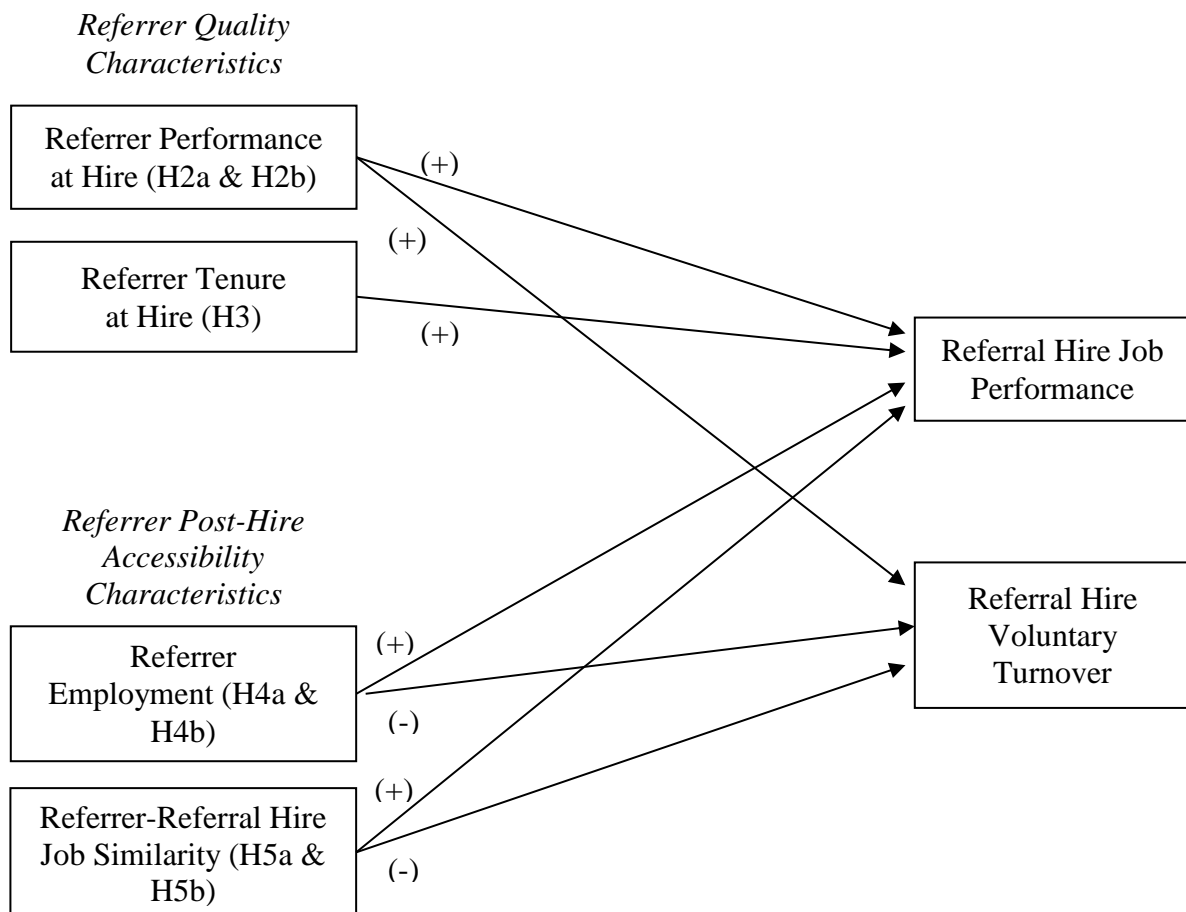


Figure 2

Curvilinear Relationship Between Referrer Tenure at Hire and Referral Hire Performance—Calls/Hour

